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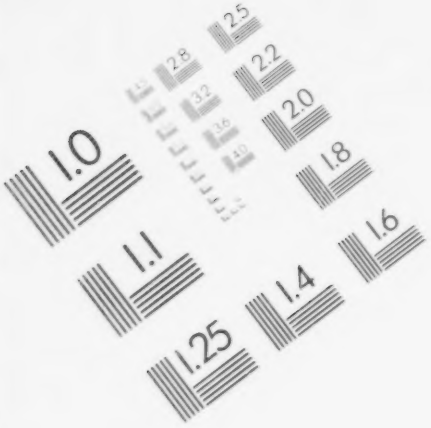

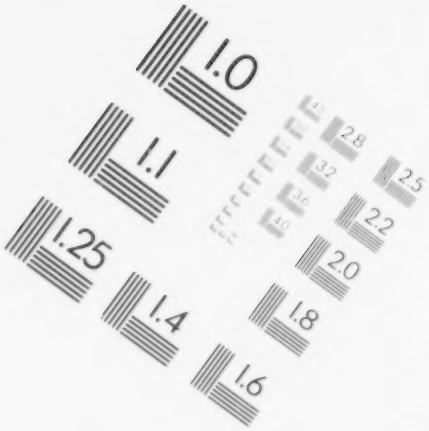

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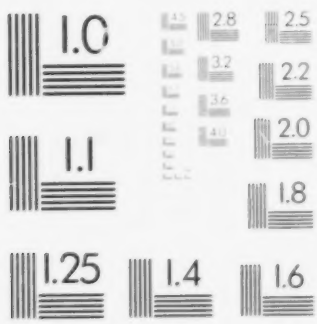

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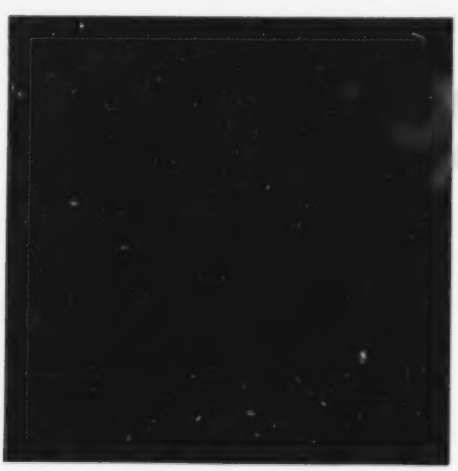

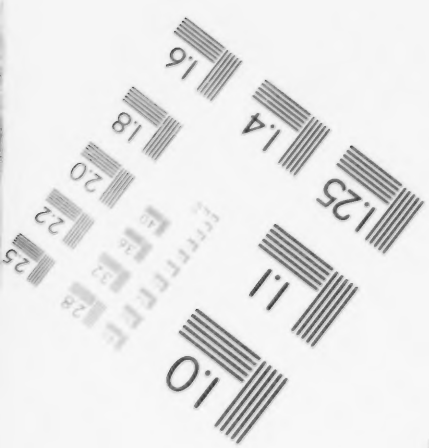

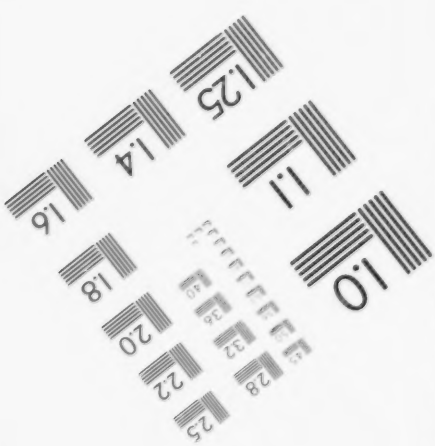

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Progress in the implementation of the Programme of Action for the Sustainable Development of Small Island Developing States

Report of the Secretary-General

Addendum

Telecommunications development in small island developing States*

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* The present report was prepared by the International Telecommunication Union, in accordance with arrangements agreed to by the Inter-Agency Committee on Sustainable Development. It is a concise update of document E/CN.17/1996/20/Add.6 and the result of consultation and information exchange between United Nations agencies, interested government agencies and a range of other institutions and individuals.

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I. Introduction

1. The importance of the development of telecommunications in small island developing States cannot be overemphasized. Well-developed and smoothly functioning international telecommunications networks are necessary to bridge the gaps of distance between small island developing States and the outside world, particularly with their trading partners, and to enable them to take advantage of many potential benefits, such as distance learning and information on environmentally sound technologies and practices, tele-health, trade and tourism. Well-developed domestic networks are necessary to enable broad access of island stakeholders to international networks, such as the Internet; to facilitate internal communications; achieve particular objectives, such as promotion of education, health and eco-tourism; and to raise public awareness about sustainable development issues (see annex for details on uses of telecommunications).

II. Overview of progress achieved

2. The measure of telecommunications accessibility or penetration — teledensity, is expressed by the number of main lines per 100 inhabitants, and is considered to be an effectual indicator of socio-economic development. A similar ratio of radio or television receivers expresses the density of radio and television sets. In recent years, most small island developing States have made perceptible progress in the telecommunications sector. In terms of teledensity, the growth rate of the sector stagnated or declined in six small island developing States from 1994 to 1997. In the rest of them it was positive, ranging from 2.7 per cent to 68 per cent over the same period, with about 20 of them registering rates of growth of 15 per cent or more (see table). A number of small island developing States achieved well above the average rates of growth in teledensity. In some, such as Cape Verde and Maldives, growth rates reflect very low initial levels; in those small island developing States, teledensity still remains very low. In others, such as Antigua and Barbuda, Netherlands Antilles and Saint Lucia, remarkable progress has been made bringing teledensity in those countries to levels comparable to or higher than average for the European region. And others, such as Mauritius and Jamaica, particularly the former, also achieved high rates of growth, but teledensity in those countries still remains in the medium range.

3. Compared with the average for the European region for 1996 in terms of teledensity, some 10 small island developing States have attained high levels of development, higher than the average level for the European region. Except for Cyprus, Singapore and Malta, those small island developing States are located in the Caribbean. Another 10 small island developing States widely spread over small island developing States' regions have achieved medium-level development. In the rest of the small island developing States or nearly half of them, the development of telecommunications ranges from rudimentary to mediocre; most of those are located in the Pacific. In terms of teledensity, there is a high positive correlation between the level of development of telecommunications and the level of per capita income, with the extent of dispersion of islands in the archipelagic small island developing States and population size playing a negative role. In general, the smaller the islands and the higher the per capita income the higher the teledensity. At the regional level, available data (see table) does not permit a direct comparison between the level of teledensity in small island developing States and the other developing countries in the Asia and Pacific region and the Caribbean. In general, however, the level of teledensity in small island developing States is higher than in other developing countries.

4. Since the Global Conference on the Sustainable Development of Small Island Developing States, all small island developing States except Niue and Tuvalu have established connectivity with the Internet. Through the United Nations Development Programme, the Small Island Developing States Network (SIDSNET) Web site (at www.sidsnet.org) has been created, which enables communication among small island developing States. In most small island developing States access at the national level to the Internet and therefore also to SIDSNET is currently limited to governmental institutions and larger private organizations. In many small island developing States, access by stakeholders is constrained by a number of obstacles, including poor telecommunications infrastructure, high cost of computers, high cost of dial-up and leased lines to the Internet, restrictive telecommunications policies and inadequacy of trained personnel.

5. In the Indian Ocean, Mauritius and Seychelles have introduced novel services, including mobile cellular phones and radio paging, and direct satellite broadcasting, and will soon have global mobile personal communications by satellite (GMPCS). Mauritius also benefits from French television programmes destined for Réunion. In Seychelles, intra-island communications within the archipelago is currently enabled through terrestrial-submarine cable links. The Government of Bahrain is promoting the island as an

information technology (IT) centre in the Gulf. IT is being spread through the Government, industry, banking, education, insurance and commerce sectors spearheaded by the Bahrain Computing Forum. Batelco, the national public telecommunication operator (PTO), is working with the country's IT industry to develop interactive networked multimedia applications. In the Mediterranean, Cyprus and Malta have well-developed telecommunications networks comparable to those of Western Europe.

6. In the Caribbean, telecommunication operations are fully or partly owned by Cable and Wireless (C&W) of the United Kingdom or France Telecom. C&W has helped the Eastern Caribbean fibre system, which will interlink those countries and pave the way for cable television and other advanced new services in the region. A number of Caribbean small island developing States are taking advantage of their location and knowledge of the English language by developing information-processing centres for North American firms. The Government of Barbados has identified informatics as one of the areas with the greatest potential for generating foreign exchange and jobs. In 1994, the issue of information infrastructure was addressed at the Summit of the Americas, which mandated the Organization of American States Inter-American Telecommunication Commission to prepare a work programme to evaluate regulatory, technical and legal issues to assist the countries of the region in building information infrastructure.

7. In Asia and the Pacific, Singapore has by far the most advanced telecommunication network among the Asia and Pacific small island developing States, more developed in fact than some of the Organisation for Economic Cooperation and Development networks. Regional organizations, such as the Asia and Pacific Telecommunity (APT) and the Asia-Pacific Economic Cooperation Forum, have been promoting the information infrastructure concept. The APT group has identified such areas as interconnection, open access, enhancement of value added services and regulatory frameworks as important for information infrastructure development.

III. Problems and constraints

8. In general, the telecommunications sector in developing countries is hampered by underinvestment; poor management due to monopolistic structures and inadequate human resources development; poor maintenance of equipment and networks; low penetration of services, particularly in rural areas; high tariffs due to lack of competition; and relatively higher unit costs for provision of services. The current environment is evolutionary and inherently complex, ushering in a new problem of policy choices, such as whether to privatize or not, what technology to adopt or how much to invest. Most small island developing States suffer from one or more of those problems.

9. Equipment maintenance problems are often aggravated by poor planning and unorthodox installation practices. In many small island developing States, hurricanes continue to play havoc with installations. Human resources development is becoming increasingly expensive due partly to rapid change in technology and techniques and the requirement for higher calibre trained personnel. Foreign-owned PTOs have overcome that problem by employing expatriates, but they must now begin training indigenous personnel.

10. Although globalization has been cited as one of the factors promoting rapid telecommunications development, it can become a problem, especially for the weaker, smaller PTOs which have not been able to readily embrace globalization and the information revolution it brings. Instead of consolidating and taking off, the weaker networks may in fact get marginalized.

11. There is also a real risk that the information revolution will exacerbate the gap between the information poor and information rich, which has serious implications for individual welfare. In the future, access to information will more directly affect individual welfare. It may determine opportunities for work, education or medical treatment. For that reason, public policy makers must continue to aim for universal access and affordability. In the absence of such a vision, much of the investment in new services is likely to be targeted at wealthy neighbourhoods, at the expense of the urban poor and of people in rural areas. Some degree of cross-subsidization may be necessary, for example, from international services to national services, or from mature markets to new services. However, it is important to ensure that cross-subsidies do not interfere with the operation of normal market processes or create havens where competitive market entry is disabled by unfair pricing strategies on the part of existing network operators.

IV. Emerging problems in the sector

12. The new international accounting rate regime fostered by the World Trade Organization (WTO) and ITU is likely to negatively affect revenues for telecommunication operators and Governments in small island developing States, as well as in most developing countries. This will be

further exacerbated by fierce competition since many countries privatize their networks, and by alternative calling methods, including Internet telephony. The advent of GMPCS services will bring teething problems, but ITU has already foreseen those and is ready to assist developing countries in dealing with them as they arise. The recent economic woes affecting Asian economies is having ripple effects on investments in telecommunications in the Asia and Pacific small island developing States.

V. Medium-term priorities for small island developing States

13. The Second World Telecommunication Development Conference, held at Valletta in 1998, adopted the Valletta Action Plan, with a core of six programmes designed to address priority areas in the development of telecommunications in the developing countries. The programmes cover (a) reform, legislation and regulation of telecommunications; (b) technologies and global information infrastructure development and applications, including GMPCS and the Internet; (c) rural development and universal service/access; (d) finance and economics, including WTO issues, tariffs, accounting rates etc; (e) development partnership with the private sector; and (f) capacity-building through development of human resources and management. In addition to those programmes, regular world and regional development conferences will evolve global and regional policies and strategies, and special study groups will study specific questions of concern to developing countries and make appropriate recommendations to them. The private sector is expected, henceforth, to play a greater role in the development of telecommunications in small island developing States.

VI. Recommendations for future action

National and regional levels

14. The following actions are recommended:

(a) Governments of small island developing States should give high priority to rural telecommunications in order to facilitate access of rural populations to telecommunications services. Governments need to define clear universal service objectives and specify how they can be achieved under the prevailing conditions. Policy makers may consider imposing preconditions for the franchising or privatization of lucrative services, such as mobile communications or international services, for instance by including obligations to develop rural telecommunications in the licensing conditions of new operators;

(b) Small island developing States should increase their investment in telecommunications development in order to increase the penetration of basic telecommunications as a step towards achieving universal availability of those services and to facilitate the introduction of new services in the future. Where public or private telecommunications monopolies still exist, it is strongly recommended that steps be taken to create a competitive environment through restructuring and liberalization of service provision and market access;

(c) Small island developing States should endeavour to develop special networks on a cooperative subregional basis for (i) disaster communications; (ii) environmental protection; (iii) other telematic services on the Internet for activities of specific concern to them, such as tourism, agriculture and other activities which are crucial for their sustainable development;

(d) Small island developing States should consider forging closer cooperation among themselves in order to pool their resources and strengthen their bargaining positions, which may be difficult because of the wide geographical spread of the small island developing States. However, within certain regions, such as the Pacific and the Caribbean, there are sufficient small island developing States and other developing countries that can cooperate in such areas as joint training and pooled equipment purchases. They should also take advantage of existing cooperative regional and international telecommunication activities, as well as new projects and institutions, such as WorldTel.

International level

15. The following actions are recommended:

(a) Development partners should assist small island developing States in identifying the best ways and means of securing financial resources from different sources. This could be done through organizing investment seminars and donor conferences for small island developing States to help raise funds for telecommunication investment. There needs to be mutual understanding of the requirements and obligations of each party or country, development partners and the private sector. This will help small island developing States to adopt a long-term strategy to make their telecommunication sectors self-sufficient;

(b) Multilateral donor agencies, such as the World Bank and the regional development banks, should step up

their overall lending to small island developing States and do more systematic planning. They should consider funding a series of projects over a number of years to remedy the current uneven pattern of investment. The development banks should work together to develop a common set of criteria to be used when evaluating proposed projects, which could include preferences to countries which are moving faster towards market liberalization, creation of stable regulatory environments, tariff and management reforms. A certain percentage of funds set aside for infrastructure projects in small island developing States might be reserved for initiatives involving a preponderance of private-sector participation;

(c) Future world conferences/summits must specifically address small island developing States telecommunication issues. World leaders must have the vision to address the compelling telecommunications issues which affect small island developing States, and the Commission should continue to monitor progress in telecommunications development in those countries.

Ranking of small island developing States by teledensity in 1997

Country or area	Population 1997		GDP (US$) 1996		Main telephone lines				
					1994		1997		1994-1997
	Millions	Per km	Billions	Per capita	Thousands	Per 100 inhabitants	Thousands	Per 100 inhabitants	Percentage change[a]
United States Virgin Islands	0.11	310	...	...	59.0	56.52	62.1	58.07	2.7
Cyprus	0.68	73	8.9	13 435	330.4	45.02	385.0	56.97	26.5
Singapore	3.10	5 038	92.1	30 252	1 331.7	47.26	16 849.0	54.29	14.9
Malta	0.38	1 189	3.4	8 970	162.9	44.80	187.0	49.76	11.1
Antigua and Barbuda	0.07	160	0.5	7 914	19.2	28.86	28.0[b]	40.81	41.4
Barbados	0.27	624	2.0	7 508	87.0	33.35	108.5	40.43	21.2
Saint Kitts and Nevis	0.04	157	0.3	6 589	13.6	33.16	15.6[b]	38.16	15.1
Aruba	0.09	469	1.5	17 109	21.0	31.34	33.2	36.69	17.1
Netherlands Antilles	0.22	272	...	...	50.0	25.54	75.9[c]	36.59	43.3
Bahamas	0.29	21	3.1[c]	11 001	76.2	28.64	96.3	33.33	16.4
Cook Islands	0.02	82	0.1	7 600	4.8	25.59	5.1	26.92	5.2
Grenada	0.10	294	0.3	2 994	21.0	22.83	26.5	26.10	14.3
Dominica	0.07	100	0.2	3 146	16.7	23.52	18.7[b]	25.23	7.3
Niue	...	8	...	...	0.5	25.00	0.5[d]	25.00	0.0
Saint Lucia	0.15	243	0.5[d]	3 570	25.0	17.24	37.0	24.72	43.4
Bahrain	0.62	938	5.8	9 702	135.9	24.77	152.3	24.57	-0.8
Nauru	0.01	543	...	...	1.7	15.74	2.2[b]	19.64	24.8
Seychelles	0.08	191	0.5	6 679	12.5	17.08	14.9[b]	19.56	14.5
Mauritius	1.14	612	4.3	3 799	129.4	11.72	222.7	19.52	66.6
Trinidad and Tobago	1.28	250	5.8	4 576	203.8	15.78	243.4	19.01	20.5
Saint Vincent	0.11	294	0.2[d]	2 170	17.2	15.47	20.5	17.93	15.9
Jamaica	2.53	222	5.9	2 357	250.5	10.31	353.0[b]	14.03	36.1
Tokelau	...	164	...	...	...	...	0.2	10.50	...
Fiji	0.78	43	2.1	2 730	59.5	7.71	71.8	9.19	19.2
Cape Verde	0.41	101	0.3[d]	876	18.6	4.87	33.2	8.19	68.2
Tonga	0.10	142	0.2	1 815	6.5	6.60	7.8[b]	7.90	19.7
Micronesia (Fed. States of)	0.11	80	0.2[d]	1 949	7.2	6.74	8.2	7.56	12.2
Maldives	0.27	916	0.2	665	11.9	4.82	18.0	6.58	36.5
Marshall Islands	0.06	32	...	...	3.0	5.69	3.4[b]	5.92	4.0
Samoa	0.17	59	0.1	915	7.8	4.62	8.5	5.06	9.5

Country or area	Population 1997		GDP (US$) 1996		Main telephone lines				
					1994		1997		1994-1997
	Millions	Per km²	Billions	Per capita	Thousands	Per 100 inhabitants	Thousands	Per 100 inhabitants	Percentage change[a]
Tuvalu	0.01	411			0.5	5.04	0.5[b]	5.04	0.0
Cuba	11.05	96			350.0	3.20	370.8	3.36	5.0
Kiribati	0.08	119	...	545	1.9	2.50	2.5	3.06	22.4
Vanuatu	0.18	12	0.2[c]	1 404	4.4	2.68	4.5	2.57	-4.1
Sao Tome and Principe	0.14	145		358	2.5	1.97	2.5[c]	1.97	0.0
Solomon Islands	0.40	14	0.4[c]	949	6.0	1.64	7.8	1.93	17.7
Papua New Guinea	4.21	9	4.9[c]	1 205	40.0	0.95	47.0[b]	1.07	12.6
Comoros	0.65	350	0.2[c]	382	4.3	0.88	5.5	0.84	-4.5
Regions									
Africa	2.42	265	5.4	2 331	167.2	7.71	278.9	11.61	50.6
Americas	16.38	110	20.3	4 122	1 210.20	7.52	1 489.6	9.11	21.1
Asia and Pacific	9.51	18	100.6	10 982	1 487.40	16.32	1 872.9	19.32	18.4
Arab States	0.62	938	5.8	9 702	135.90	24.77	152.3	24.57	-0.8
Europe	1.05	110	12.2	11 820	493.30	44.95	572.0	54.39	21.0
All small island developing States	29.98	43	144.4	7 993	3 493.90	12.04	4 365.6	14.49	20.4

Source: ITU, United Nations, IMF, World Bank, OECD.

Note: Three dots (...) indicate that data are not available.

[a] In main telephone lines per 100 inhabitants.

[b] 1996.

[c] 1995.

[d] 1994.

Annex

Note on the need for and uses of telecommunications in small island developing States

I. Telecommunication: definition and applications

A. Definitions

1. Telecommunication is defined by ITU as any transmission, emission or reception of signs, signals, writing, images and sounds or intelligence of any nature by wire, radio, optical or other electromagnetic system (see No. 1012 of the Geneva 1992 constitution). Telecommunication transmission media include metallic cables, optical fibre cables, terrestrial radio and satellite radio links. Telecommunication services include telephony, telegraphy, telex, data communications, facsimile, broadcasting (radio and television) and electronic mail. With the advent of digital technology, there is an increasing merger between telecommunication and computing ushering in a maze of ITs with attendant new services, among which electronic mail via the Internet is the fastest growing. Internet telephony is also emerging. The merger has caused the coining of a new word — telematics — which is the application of computer services to telecommunications. Mobile services which were largely maritime in the past have now encroached upon land with cellular services and global land-mobile services via fixed satellites, and soon with GMPCS services via low earth orbit satellites. There is virtually no limit to the proliferation of new services, making telecommunication and its associated ITs the most profoundly pervasive service in the modern information society. Non-public applications include meteorology, civil aviation, maritime communications, remote sensing, radar and telemetry, and military applications, over which the ITU has a nominal regulatory role through frequency assignment and certain transmission characteristics.

B. Uses

Overall development

2. As is already apparent, the pervasiveness of telecommunications means that it finds application in virtually every human activity. It is now acknowledged as the engine of growth and socio-economic development of any modern economy. Consequently, ITU has upgraded its status from a priority requirement to a basic human need, and from a catalyst to an active element in development. The right to communicate is a basic human right, as ITU and the United Nations Educational, Scientific and Cultural Organization now plainly define it. For small island developing States, the need for telecommunication services of all sorts is more compelling in view of their general remoteness, smallness and isolation. Some developmental applications are briefly discussed below.

Trade and commerce

3. Modern trade and commerce requires rapid and at times interactive means of communication. As news of world events and occurrences which affect trade now travels faster or instantaneously, such as the behaviour of economic indicators variations in major currencies, takeovers and mergers, disasters and so on, it is vital to be "plugged in" in order to take appropriate measures and countermeasures, as required. As the ITU *World Telecommunication Development Report, 1995* states, try to imagine an amount of money equal to US$ 2.3 trillion, larger than the economies of most countries, moving through an electronic network. That is the magnitude of electronic financial transactions which travel over just one network every day. It is mind-boggling but only one example of the increasing flow of electronic information, such as telephone conversations, fax, electronic mail and television broadcasts. That gigantic electronic wave illustrates the extent to which the world is becoming more dependent on electronic communications. Such dependency is altering businesses, lifestyles and societies: children in Singapore use radiopaging devices to stay in contact with parents; aborigines in Australia sell painting using video-conferencing; Brazilian banks offer services over the Internet; French residents consult electronic telephone directories to choose a plumber. From the dynamic to the mundane, electronic information services cross cultures, languages and age differences.

Rural development

4. Apart from tourism, the overall socio-economic development of most small island developing States is strongly related to primary production. Agriculture is the backbone of their economies. In view of their narrow natural resource base, their proneness to disruption by natural disasters, their small range of primary product exports and

their limited local capital for productive investment, small island developing States need to join forces for their development, so that communication and exchange of information becomes vital. Communal telecentres or "telecottages" in rural areas offer not only basic services, such as telephony and fax, but also reception centres for broadcasting services, radio and television, and telematic services and mass media. UNESCO and ITU have established many pilot activities for rural socio-economic and cultural development in education, health, agriculture and tourism. Telecommunication is also applied in agriculture to avoid disasters of serious food deficits, which may lead to widespread famine. Since 1975, FAO has been operating a global information and early warning system on food and agriculture, in which about 10 small island developing States participate. The principal objectives of the system are to monitor continuously food supply/demand conditions, identify where food shortages are imminent, and assess possible emergency food requirements with a view to disseminating in a timely manner information necessary for policy makers and operational relief agencies. Information is vital to warn where shortages may occur and how big they may be in order to prevent widespread famine consequent to crop failures. Although measures are in place to improve the quality and flow of data from developing countries to the system, more commitment from countries in providing required information, on a voluntary basis, would contribute to producing more accurate analyses of the supply/demand situation.

Tourism

5. Tourism and associated service industries are major contributors to the gross domestic product (GDP) of most small island developing States. Hotel reservations, tour operators, international travel services and so on all require a sound telecommunication network at both the local and the international levels. No hotel can acquire a four or five-star status without being endowed with ultra-modern telecommunication services, including a global news channel and a business centre. Service industries represent over 50 per cent of GDP in small island developing States, of which telecommunications contribute up to 10 per cent in some countries.

Transport and communication

6. Transport and communication services are increasingly reliant on good telecommunication systems for their efficient operations and management. Road and water transport systems must be equipped with mobile telecommunication services to maintain a competitive edge, as well as to enhance their safety and security in regions of often hostile climatic conditions. In civil aviation, special air control communication is a mandatory requirement, without which the safety of aircraft and lives of air travellers would be jeopardized.

Administration and good governance

7. Efficiency in the administration and management of both public and private-sector institutions, enterprises and concerns is enhanced by current telecommunication services and ITs, without which those activities would be severely bottlenecked. Telecommunications, electronic media and a vibrant press nurture democracy and good governance. A large diversity of sources and applications now makes it hard for dictators to control and manipulate communications media as in the past.

Telecommunications for environmental protection

8. The surveillance and monitoring of limited natural resources — water, forests, minerals, biological diversity — is facilitated by special applications of telecommunications facilities in remote sensing, radar and telemetry. The ITU Plenipotentiary Conference, held at Kyoto, Japan, in 1994, adopted resolution 35, in which ITU was committed to accelerating the use of telecommunication technologies for the protection of the environment in pursuance of the ideals of Agenda 21, as further reiterated in recommendation 7 of the Second World Telecommunication Development Conference, held at Valletta in 1998. For small island developing States with relatively small land areas, the protection of their environment is all the more crucial to assure sustainable development for future generations. The Global Conference on the Sustainable Development of Small Island Developing States specifically called for the use of telecommunication to help meet the goals of Agenda 21. The telecommunications sector is playing its part in meeting those goals in a number of ways:

(a) By transporting information in written, spoken, visual and electronic form, telecommunications provide a viable substitute for the transport of goods or people: it is invariably more energy efficient and less polluting to move information. Video-conferencing can provide an alternative to long-distance travel, telecommuting an alternative to commuting to work, and the fax offers an alternative to postal services. The level of direct substitution will never approach 100 per cent, but as tariffs for telecommunication services fall and congestion in transport networks rises, the equation is moving in favour of telecommunications;

(b) Telecommunications can help directly in environmental programmes. For instance, telemetry, remote sensing and measurement systems help to monitor pollution levels, assess the size of the gap in the ozone layer and measure traffic flows. Similarly, telecommunication systems are increasingly being used in programmes designed not only to monitor changes but actually to make interventions, such as in flow control systems for irrigation, urban heat recycling schemes or traffic management systems;

(c) Telecommunication manufacturers and operators are implementing their own environment-friendly programmes. However, telecommunications development is not necessarily benign. Cellular radio transmitters and satellite dishes can blight urban environments. Unbalanced deployment of telecommunication networks can serve to reinforce the competitive advantage of urban areas over rural areas, thus speeding up processes of unplanned urbanization and accentuating differences between the information rich and the information poor;

(d) Nuclear tests have recently been in the news, raising concerns, particularly in Asia and Pacific small island developing States. The future holds the prospect that ITs will enable us to transport electrical binary bits or pulses (0s and 1s) instead of moving and bashing atoms and thus accurately simulate a nuclear explosion, just as we can reconstruct an analogue signal from a sampled (quantized and coded) series of bits cheaply and safely. Other simulations on the size of the hole in the ozone layer, the impact of global warming on the sea level etc. can be made using ITs. The real beauty of ITs is that they permit a crucial time leeway into the future, thus enabling us to predict and avoid environmental and other disasters that current activities might precipitate.

Early warning and disaster mitigation

9. Most small island developing States are located in the tropics, where they lie exposed to seasonal climatic conditions of a catastrophic nature, such as cyclones, hurricanes, typhoons and tropical storms, and monsoons. Satellites can now track those weather formations on a continuous basis, and early warning can be given in good time on television, radio and other special networks to populations in the path of such a menace. There are also early warning systems for drought, deforestation, desertification, flooding and insect (locust) infestation, which are vital for agriculture and the environment. In resolution 36 adopted at its Plenipotentiary Conference at Kyoto in 1994, ITU calls for further studies to bring about intensified application of new telecommunication technologies for early warning, disaster preparedness a management, and reconstruction, in accordance with t ideals formulated under the auspices of the Internation Decade for Natural Disaster Reduction and the Tampe Declaration on Disaster Communications. The adoption the Convention on Disaster Communications by t Intergovernmental Conference on Emergen Telecommunications, held at Tampere, Finland, in 1998, a bold step in that direction. The ITU Plenipotentia Conference at Minneapolis in 1998 further reinforced the u of telecommunications for humanitarian assistance.

Security

10. Many small island developing States are remote a isolated, which makes them susceptible to extern aggression or even internal destabilization. Comoros h been subjected to over a dozen coups or coup attempt Seychelles and Sao Tome and Principe, as well as son other small island developing States, have had a simil experience. The existence of good internation telecommunication services tends to deter attempts aggression and destabilization since Governments c quickly call for assistance from friendly nation Psychologically, good external telecommunication servic help to reduce the sense of isolation as the islands fe ' bei part of a global village when connected with glob information infrastructure. And for an archipelagic State li Seychelles, the aerial surveillance of its huge exclusi economic zone against foreign illegal fishing is muc enhanced by good intra-island telecommunication service